

CEESEN-BENDER



Building intErventions in vulNerable Districts against Energy poveRty

Deliverable 6.2

Lessons learnt and policy recommendations to national and EU level policy makers

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project results

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Background of the CEESEN-BENDER project

The main goal of “Building intErventions in vulNerable Districts against Energy poveRty” (i.e. CEESEN-BENDER) project, launched on September 1, 2023, is **to empower and support vulnerable homeowners and renters living in Soviet-era multiapartment buildings (MABs) in 5 CEE countries**: Croatia, Slovenia, Estonia, Poland, and Romania. The project will help them through the renovation process by identifying the main obstacles and creating trustworthy support services that include homeowners, their associations, and building managers.

Coordinated by Society for Sustainable Development Design (DOOR), the CEESEN-BENDER project brings together leading European researchers and experts in field from six countries: **Croatia** (Society for Sustainable Development Design / DOOR, Medjimurje Energy Agency Ltd. / MENE, EUROLAND Ltd. / Euroland, GP STANORAD Ltd. / GP STANORAD), **Estonia** (University of Tartu / UTARTU, Tartu Regional Energy Agency / TREA, The Estonian Union of Co-operative Housing Associations / EKYL), **Slovenia** (Local Energy Agency Spodnje Podravje / LEASP), **Romania** (Alba Local Energy Agency / ALEA, Municipality of Alba Iulia / ALBA IULIA), **Poland** (Mazovian Energy Agency / MAE, Housing Cooperative “Marysin Wawerski” / SM Marysin Waw), **Germany** (Climate Alliance) in addition to **Central Eastern European Sustainable Energy Network (CEESEN)**.

The CEESEN-BENDER project is carried out from September 2023 until August 2026 and has a total budget of €1,85 million, of which €1,75 million is funded from the European Union's Programme for the Environment and Climate Action (LIFE 2021-2027) under grant agreement n° LIFE 101120994. The project is being carried out by internationally recognized researchers and partners from the aforementioned institutions.

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Executive summary

The main goal of CEESEN-BENDER project was to **empower and support vulnerable homeowners** and renters living in Soviet-era multiapartment buildings in 5 CEE countries. To achieve the goal:

- **5 Pilot area roadmaps** were developed that prioritise building renovation based on their potential for maximising emissions reduction via energy savings as well as an increase of quality of life and wellbeing for vulnerable homeowners.
- For the 5 pilot areas, **30 building-level roadmaps** were created, that specify the technical details for renovations.
- Digital support tools were developed to make renovation process smarter, easier and more efficient. The tools include:
 - Data-based **digital tool that ranks buildings for renovation**;
 - Digital **tool for the calculation of the return of the investment**.
- Homeowners, landlords and building managers were **trained** on legal, financial, technical and other aspects of energy renovations. Guidelines for facilitation of communication between building managers and homeowners on building renovation process were developed.
- **Barriers for the renovation were identified**, and **policy recommendations were developed** to lower the costs and time needed for the preparatory phase of projects.

CEESEN-BENDER project showed that **socially inclusive renovation support, local stakeholder engagement, and targeted capacity-building can significantly improve readiness for energy renovation**. Stakeholders particularly valued practical support, face-to-face consultations, expert visits, study visits, training materials, and clear examples of successful renovations. Training activities, communication tools, and cooperation between municipalities, building managers and energy agencies proved especially effective in building trust and increasing awareness of renovation opportunities.

However, several challenges limited project impact. Across countries, renovation progress was hindered by insufficient and unpredictable funding, high renovation costs, rising material prices, shortages of skilled professionals, and complex administrative procedures. Many vulnerable households were difficult to identify and engage because of limited data, lack of clear definitions of energy poverty, privacy constraints, or reluctance to self-identify. Low trust, fear of debt, dependence on grants, and difficulties achieving consensus among apartment owners also slowed renovation decisions.

Key lessons learned by project partners include:

- **Practical examples**, demonstrations, study visits, simulation exercises and real-life case studies are more persuasive than theoretical information alone.
- **Personal, face-to-face engagement** is significantly more effective than generic awareness campaigns for reaching vulnerable households and building trust.
- Vulnerable households will not engage with energy renovation support unless it comes through a person or institution they already trust. Future projects

should allocate significant resources to **building relationships through trusted intermediaries** (local social workers, familiar building managers, community leaders) before attempting any technical assistance or awareness raising.

- Energy-poor households actively avoid being labelled as such. **Future projects should avoid using the term "energy poor"** in direct communication with beneficiaries and instead focus on "healthier homes," "lower bills," or "better living conditions." Outreach should be done through discreet, one-on-one contacts rather than public workshops.
- Working with vulnerable households requires a much slower pace than initially planned. Home visits, trust-building conversations, and repeated follow-ups cannot be rushed. **Future projects should build extra time buffers for engagement activities**, especially in WP2 and WP5.
- **Building managers, homeowner associations and local authorities** are critical intermediaries and **should be supported through training**, guidance and one-stop-shop services.
- **Capacity-building works**: training increased knowledge and confidence among energy professionals and building managers.
- **Stable and predictable renovation funding schemes are essential**. Heavy dependence on short-term grant calls creates uncertainty, delays projects and discourages long-term planning.
- The **lack of grant schemes specifically targeting energy-poor households** in MABs made it often impossible to translate project-supported roadmaps into actual renovations. **Future LIFE projects should include stronger advocacy components aimed at national ministries to create such dedicated funding streams** before or during the project timeline.
- Without dedicated grant schemes that require no co-financing from vulnerable owners, even the best technical assistance and roadmaps will often not lead to actual renovations. Policy advocacy must prioritize the creation of **100% grants or alternative financing models** (e.g., Social Fund for Climate Policy) **that remove the financial barrier entirely for energy-poor households**.
- **Better data** and clearer identification mechanisms for energy-poor households are needed to target support effectively.
- The engagement of building managers was largely driven by project requirements rather than direct benefits to their core operations and that limited their motivation. **Future projects should design concrete incentives before expecting active participation**.

1. Relevance of the deliverable

The **present report documents experiences and insights of the CEESEN-BENDER project that may be valuable to future projects**. It captures practical knowledge about what worked, what did not, and why when supporting energy renovations for vulnerable households in Central and Eastern Europe (CEE). Since the project is testing approaches across five countries with different legal, institutional, and housing contexts,

documenting these experiences has value well beyond the project itself. Thus, the present report provides **basis for continuous improvement: ensuring successful strategies are repeated and past mistakes are not duplicated** in future.

Key target group for this report are local, national and international decisionmakers who will gain better understanding of the situation of energy poor social group. By understanding the challenges, barriers and available solutions they will be able to make more inclusive decisions and direct state funding more efficiently.

2. Introduction

Throughout the project, the effect of the activities was monitored and evaluated. Feedback and monitoring were conducted by interviews with municipal stakeholders to assess the capacity building process, online questionnaire to municipal authorities and management companies to assess the quality of training provided by project partners, the level of gained knowledge on energy poverty, and actions planned or taken to address it, Q&A sessions with apartment occupants on benefits of the renovation, pre-renovation survey with energy-poor households on multiple topics, meetings held with municipal, local, and national authorities and during the final conference of the CEESEN-BENDER project. The results of the monitoring and feedback were summarised by project partners into the template created specifically for this report.

The report includes the results from project key outputs, market and other analyses and stakeholder feedback. Good practices are presented, challenges and failures discussed, policy recommendations provided and replication potential explored.

3. Key outputs of the project

The project has accomplished its objective – to empower and support vulnerable homeowners and renters living in multiapartment buildings through the renovation process by identifying the main obstacles, and creating trustworthy support services that include homeowners, their associations, and building managers – through the key outputs:

- Legislative, financial, and technical **obstacles for the renovation in pilot countries were identified** and corresponding reports created (1 for each pilot area and 1 for CEE region both for the legislative obstacles and for the other obstacles). It provided information for the creation of tailor-made solutions.
- **Policy recommendations** were provided to mitigate the renovation barriers and to support more efficient renovation, which helps reducing both emissions and energy poverty. Recommendations were included to the reports about renovation barriers and are presented in chapter 6 of this report.
- **Survey on energy consumption, energy needs, and behaviours of energy poor homeowners** was conducted and an **article on the results of it** was compiled.

- **Support tools** were developed to make renovation process smarter, easier and more efficient. The tools include:
 - Digital tool that uses available digital socioeconomic, energy consumption and technical data of buildings to generate rankings of buildings that are the least energy-efficient and having occupants most likely to suffer from high levels of energy poverty;
 - Digital tool for the calculation of the return of the investment in user friendly and transparent way.
- **5 Pilot area roadmaps** were developed that prioritise building renovation based on their potential for maximising emissions reduction via energy savings as well as an increase of quality of life and wellbeing for vulnerable homeowners. The status of legislative and regulatory framework for building renovation was mapped; energy poverty situation explored; national programmes for renovation mapped; main drivers and difficulties for renovation discovered; financial solutions explored; renovation costs estimated and tools supporting estimation and planning of renovation were provided. Finally, tailored recommendations for the pilot areas were provided.
- Within the 5 pilot areas, **30 in-depth, tailored building-level roadmaps** for renovations were developed, which included technical considerations, scope of work to be performed, cost, residence inconvenience and maximum efficiency.
- **Trainings** were conducted to mitigate the barriers of the renovation process:
 - 2629 homeowners, landlords and building managers were trained on legal, financial, technical and other aspects of energy renovations. An online webinar will be created to train people, so the number will increase considerably.
 - 759 energy poor homeowners or renters have been involved in project activities via home visits-consultations, info point consultations, workshops and surveys.
 - 11 management companies of MAB-s and 10 local authorities have been directly involved in the project activities.
 - Training materials on providing consultations to vulnerable groups have been created.

4. Building renovation barriers identified

The CEESEN-BENDER partners identified several renovation barriers and proposed solutions to mitigate them. Policy recommendations were provided for both national and EU level.

Several **regulatory barriers** slowed down or complicated building renovation efforts. Preparation of renovation projects, grant applications and financing arrangements requires significant effort. Data quality on the building stock varies across countries, it often is either outdated, incomplete or not easily accessible. Lack of specific national

targets and programs for energy poverty. The barriers undermine the accuracy and effectiveness of renovation planning and targeting of buildings most in need.

Table 1. Regulatory barriers

Barrier	How it hinders renovation	Was it overcome
Data protection restrictions.	Difficulties identifying vulnerable households reduced the effectiveness of targeted engagement and support activities.	Partially
Lack of specific national targets and programs for energy poverty (support schemes are targeted at entire buildings, not an energy-poor households)	Limited the ability to directly target and support energy-poor households through renovation measures.	Partially
Energy poverty definition varies across countries and might not be optimal.	Limited the ability to directly target and support energy-poor households, difficult to compare countries.	Partially
Preparation of renovation projects, grant applications and financing arrangements requires significant effort.	Reduced the number of buildings able to proceed with renovation.	Partially
No explicit integration of "just transition" and social inclusion principles in key renovation documents.	Limited focus on how renovations contribute to reducing social inequalities or ensuring vulnerable groups are not left behind.	No
Legislative obstacles for citizen energy communities (e.g., restrictive legal forms, complex procedures in the Act on the Electricity Market).	Prevented actual implementation of energy communities and installation of PV systems within MABs.	No

The CEESEN-BENDER partners consistently identified high renovation costs and limited affordability as the most significant **financial barriers** to renovation. Many homeowners, particularly vulnerable households, lacked the financial resources to cover their share of renovation costs, while rising construction and material prices further reduced the feasibility of deep renovation projects. Another major challenge was the dependence on grant schemes and unstable funding opportunities. Many renovation projects are delayed because building owners wait for subsidy calls or lack access to suitable financing instruments. Limited availability of low-interest loans and targeted support for vulnerable households made it difficult to move from renovation planning to implementation.

Table 2. Financial/economic barriers

Barrier	How it hinders renovation	Was it overcome
High upfront costs of deep renovation.	Made deep renovations rare.	No
Limited access to affordable financing in regions with low property values.	Reduced the feasibility of renovation projects in economically weaker regions / poor households.	No
Significant gap between available public funding and identified needs.	Made deep renovations rare; households depend on unpredictable subsidies and unable to finance projects independently.	No
Strong dependence of the renovation market on public grant schemes.	Renovation activity often slows down while buildings wait for grant calls and funding decisions.	Partially
High interest rates.	Loan uptake for renovations is negligible; homeowners overwhelmingly depend on personal savings or unpredictable grants.	No
Low household repayment capacity; banks reluctant to lend for renovations		No
Fluctuating and unpredictable grant calls; demand for grants far exceeds supply (calls oversubscribed within days).	Created market instability (peaks/stagnation), discouraged long-term planning, and left many eligible buildings unsupported.	No
Public calls for renovation grants don't specifically target energy-poor households in multi-apartment buildings. The calls have no preferential criteria for vulnerable owners.	Hindered the project's ability to motivate energy-poor households to engage in renovation planning, as they saw no realistic path to accessing funding even if roadmaps and technical documentation were prepared. Many households lost interest once they realized they would still need to contribute financially, despite the project's support services.	Partially

Market-related barriers included shortages of qualified designers, energy experts, contractors and skilled construction workers, as well as limited market capacity to meet growing renovation demand. These market constraints delayed project preparation and implementation, increased costs, and reduced the ability of homeowners and building managers to undertake comprehensive energy renovations.

Table 3. Market barriers

Barrier	How it hinders renovation	Was it overcome
Shortage of skilled on-site workers	Led to poor quality outcomes when uncertified contractors were used; slowed down project delivery during peak demand periods.	No
Shortage of certified construction companies specializing in renovation.		No
Shortage of qualified consultants, designers and specialised renovation experts.	Delayed project preparation, increased costs, and limited the number of buildings that could progress simultaneously through the renovation process.	Partially
Fast and unforeseen increases in the prices of the materials and works.	Did not affect the project but significantly reduces renovation.	No

CEESEN-BENDER identified a range of **technical barriers** related to the condition and characteristics of buildings, as well as the availability of information needed for renovation planning. Some buildings required complex, building-specific solutions that could not be addressed through standard renovation approaches, particularly in the case of older, heritage-protected or structurally challenging buildings. In addition, incomplete building data and limited technical information complicated energy assessments and renovation planning. These technical challenges increased project complexity, raised costs, and often delayed the preparation and implementation of comprehensive renovation measures.

Table 4. Technical barriers

Barrier	How it hinders renovation	Was it overcome
Poor and failing structural conditions (e.g., roofs, balconies, load-bearing walls) in many older MABs.	Triggered reactive, partial renovations rather than strategic, deep energy renovations; increased complexity and cost.	Partially
Renovation knowledge, standard solutions and market capacity is limited for smaller buildings, wooden buildings, heritage and protected properties, which often require customised technical solutions.	Increased technical uncertainty, project development costs and preparation time, while reducing opportunities to use standardised renovation approach.	No
Not enough specialised engineering, design and renovation experts.	Created bottlenecks in project preparation, extended waiting times for expert support, and contributed to increased consultancy and design costs.	No

Social and psychological barriers were often as important as financial or technical ones in preventing renovation. Many residents were reluctant to engage in renovation projects due to low awareness of benefits, fear of debt, distrust of institutions or service providers, and concerns about disruption during construction. Achieving consensus among apartment owners was frequently difficult, particularly in multi-apartment buildings with diverse income levels and priorities. These factors slowed decision-making, reduced participation in renovation programmes, and limited the uptake of available support measures.

Table 5. Social/psychological barriers

Barrier	How it hinders renovation	Was it overcome
Low willingness to undertake renovations without grants.	Reduced willingness of homeowners to support deep renovation projects.	Partially
Reluctance to borrow due to fear of debt and perception that energy savings are offset by loan repayments.	Reduced willingness of homeowners to support deep renovation projects.	Partially
Grant programs require co-financing.	Vulnerable groups who would benefit most from energy efficiency improvements remain excluded from support.	No
Grant programs require proactive application by owners/managers.		Partially
Many renovation decisions are triggered by urgent technical problems rather than long-term renovation planning.	Fragmented investments and missed opportunities for comprehensive renovation.	Partially
Low engagement of residents, lack of trust towards the building managers and contractors or bad renovation-related experiences in the past.	Missed renovation opportunities.	Yes
Different opinions between generations.	Younger residents are in favour of renovation, but older ones are more likely to oppose.	Partially

Many barriers were related to the availability and accessibility of **data**. It included energy consumption and socio-economic data and data about technical characteristics of buildings.

Table 6. Other barriers

Barrier	How it hinders renovation	Was it overcome
Limited available data on energy poverty.	Reduced the effectiveness of targeted engagement and support activities.	Partially
Limited availability of building, energy consumption and socio-economic data.	Undermines the accuracy and effectiveness of renovation planning and targeting of buildings most in need.	Partially
Outdated and incomplete data on the building stock.		Partially

5. What worked, what didn't and how to improve

5.1. What Worked Well (Good Practices)

CEESEN-BENDER project participants engaged in several highly successful practices in numerous fields. Building trust, providing personalised support and creating a network of trained energy professionals for vulnerable households formed the basis for project success.

Stakeholder engagement and communication

- **Face-to-face communication proved successful**, particularly when engaging vulnerable households. Household visits proved highly effective in building trust, understanding household circumstances, and motivating residents to begin renovation processes.
- Because of the knowledge gained from the **Train the Trainer workshop**, experts approached vulnerable households with more care, understanding and empathy and managed to get a very positive response.
- **Direct engagement through building managers, housing administrations and local authorities** improved access to residents and vulnerable groups who were otherwise difficult to reach.

Technical support and advisory services

- **Individual consultations and expert advice** were highly valued by homeowners, landlords, and vulnerable households. The data of **air quality measurements** (CO₂, moisture, temperature) in pilot buildings was used to showcase the health benefits of deep renovation (reduced mould, dampness, improved indoor air quality) to homeowners and landlords. This evidence-based approach helped convince reluctant co-owners of the non-energy benefits of renovation, which is particularly effective in CEE countries where health arguments resonate strongly.
- **Creating a network of trained energy professionals for vulnerable households** – the project formed expert groups in each pilot region (one expert from project partners and one local expert) who received training on consulting vulnerable groups, including social skills to approach energy-poor households. This network continues to provide services after the project ends, ensuring long-term

sustainability. The training materials were aligned with the EPAH (European Energy Poverty Advisory Hub) handbook, ensuring consistency with EU best practices. This model is highly replicable across CEE countries where such expertise is lacking.

- A user-friendly **tool was developed to calculate the return on investment** for different energy efficiency measures. This is particularly important in CEE countries, where consumers are more motivated by information on costs and energy bill savings than by environmental arguments. The tool uses market data from the national level and adjusts it to local conditions in each pilot region. It helps vulnerable households overcome the fear that high renovation costs will further burden them, by transparently showing the payback period and long-term savings. After the project ends, national partners continue offering the tool on their webpages and updating local data, ensuring long-term sustainability and accuracy.
- A **tool was designed using available digital socioeconomic data to generate rankings of buildings** that are the least energy-efficient and have occupants most likely to suffer from energy poverty. The tool was validated through manual data collection (visual inspections, interviews, assessment of maintenance arrears). This allows municipalities and large housing stock owners to objectively allocate limited grant funding to buildings in greatest need, addressing the current problem of subsidies going to higher-income households with more free time to apply. The tool has novel approach – focus on energy poverty.

Demonstration and learning activities

- **Study visits and demonstration projects** were repeatedly identified as effective because they provided tangible examples of successful renovations and increased stakeholder confidence.
- **Workshops, training sessions, webinars and Q&A events** increased awareness of renovation opportunities, funding schemes and technical solutions. Train the Trainer workshop showed to be very useful.
- **Simulation exercises and practical examples** helped participants understand renovation processes and financial implications.

5.2. What Did Not Work Well (Challenges and Failures)

Reaching vulnerable households

- **Some households were reluctant to identify themselves as energy-poor** because of stigma or shame. This made it very difficult to recruit them for surveys, workshops, and home visits. Even when they were aware of available support, many chose not to participate rather than admit their situation publicly.
- **Vulnerable households were difficult to identify and engage** due to data limitations, privacy restrictions, and lack of cooperation mechanisms between social and energy sectors.
- **Group workshops were sometimes less effective for vulnerable residents**, who preferred discussing personal financial and housing issues privately.

Some project outcomes turned out to be less effective than expected

- **In Estonian context area level roadmap** turned out to be not the best tool as there is nobody who can be directly responsible for it.
- **Digital tool ranking buildings for renovation can't be used by wide audience** – still special knowledge is needed. (However, the tool has novel and potentially very useful approach.)
- **Some KPIs were too optimistic** and remained unreached.
- **Access to complete building data was often insufficient**, making technical assessments and targeting more difficult.

Awareness and participation

- **Residents frequently showed very little trust in unknown experts, researchers, or project staff.** They were reluctant to open their doors, share personal information about their energy consumption and financial situation, or accept advice from someone they did not know. This significantly slowed down the process of data collection (e.g., the energy poverty survey in WP3) and the provision of support services (WP5). **Vulnerable households did not believe in the benefits of energy renovation (lower bills, better indoor climate, health improvements) simply by hearing about them from project experts.** They only became convinced when someone they already knew and trusted, like a neighbour, a building manager they had a good relationship with, or a family member confirmed the information. This added an extra layer of complexity and time to awareness-raising activities.
- **Getting people to participate in events** turned out to be an issue, despite promotion efforts (leaflets for promoting workshops had very small effect). Landlords and homeowners sometimes showed very small interest in the workshops and Q&A sessions organized for them, municipalities were constrained in terms of the time staff can dedicate to it.
- Due to limited staff resources and numerous operational responsibilities, **some stakeholders had insufficient time to actively engage** in project activities.
- The **involvement of associated partners** would have been significantly stronger if the project had included direct investment in their buildings, such as funding renovation of at least one building through the project, which would have aligned project goals with their business interests.

5.3. Suggestions for Improvement

Across stakeholder groups, a recurring recommendation was to place greater emphasis on **direct engagement, practical support and long-term follow-up** rather than relying primarily on awareness-raising activities. Stakeholders also stressed the need for more stable financing opportunities, simpler administrative procedures, stronger local partnerships and the continued provision of integrated technical and financial advice to help move from planning to implementation.

Stakeholders from **vulnerable households** highlighted the need for more personalised and continuous support, including additional home visits, one-to-one consultations and practical assistance throughout the renovation process. They also expressed a desire for clearer information on available financial support, renovation costs, expected benefits and administrative procedures. Some feedback suggested increasing

outreach efforts through trusted local actors and simplifying communication materials to make them easier to understand.

Homeowners and homeowner associations requested more support with financing and grant applications, as well as practical guidance on managing renovation projects and reaching agreement among residents. They valued technical advice but indicated that additional examples of successful renovations, financial calculations and step-by-step guidance would help increase confidence and facilitate decision-making.

Building managers emphasised the need for additional training, tools and administrative support. They suggested simplifying procedures related to renovation planning and funding applications, providing more resources for stakeholder engagement, and strengthening one-stop-shop services that could support them throughout the renovation process.

Municipal stakeholders recommended strengthening cooperation between municipalities, social services, energy agencies and housing organisations. They highlighted the importance of improved data availability for identifying vulnerable households, continued stakeholder coordination, and wider dissemination of project results and good practices to support replication and scaling-up.

Energy advisors and technical experts suggested expanding training activities, peer-learning opportunities and exchanges of good practices. They also highlighted the need for stronger market capacity, improved access to building data, and continued development of practical tools that support renovation planning, prioritisation and financial assessment.

Based on stakeholder feedback, CEESEN-BENDER partners have several recommendations for future projects. It is important to focus on the needs of vulnerable households, mitigate financial constraints, enhance stakeholder capacity and support structures and use smart communication methods.

Improve support for vulnerable households

- Establish **stronger cooperation between energy advisors, municipalities, social services, NGOs and housing organisations** to identify and support vulnerable households more effectively.
- Increase **one-to-one consultations, home visits and personalised support** rather than relying primarily on workshops.
- Develop **clear criteria and data-sharing mechanisms** for identifying energy-poor households while respecting privacy requirements.

Strengthen financial motivation

- Provide clear **financial examples, ROI calculations** and guidance on **available funding** schemes.
- Introduce **targeted financial assistance for low-income households**, including grants with reduced co-financing requirements.
- Include investments for the buildings of building managers who provide help with the project.

Enhance support structures

- Establish or expand **one-stop-shop services** where managers can receive technical assistance and guidance throughout the process.

- Select informed landlords for future practical activities, with whom the cooperation is easy and reliable.
- Provide more practical materials, templates, and renovation examples that stakeholders can easily understand and replicate.

Build stakeholder capacity

- Offer specialised training for **building managers**, particularly on communication, stakeholder engagement, and renovation project management.
- Strengthen capacity building for **local authorities** through tailored training programs and technical assistance. Provide additional support to smaller municipalities with lower administrative capacity.
- Offer **energy professionals** targeted training in energy-efficient construction, renovation techniques, and quality control.
- Organise more **peer-learning activities and experience-sharing events**, including operational and maintenance aspects after renovation.
- Increase dissemination of **ROI calculations, financial examples and business cases** to help stakeholders understand renovation economics.

Improve outreach and communication

- Replace passive communication methods with **trusted intermediaries and community-based outreach**.
- Ensure that renovation communication reaches all apartment owners regardless of tenure arrangements.
- Focus communications on practical benefits: comfort, health, energy savings, property value and available support.
- Tailor messages to different stakeholder groups rather than using generic awareness campaigns.

Overall lesson

The strongest recurring lesson across all partner reports is that **technical solutions were rarely the main challenge**. Success depended much more on trust-building, personalised support, stakeholder coordination, predictable financing, and strong local intermediaries. Project progressed most effectively where project partners (energy agencies) acted as facilitators connecting residents, building managers, municipalities, technical experts, and funding opportunities into a coherent support ecosystem.

6. Policy recommendations

Policy Recommendations for National and International Decisionmakers

Based on the comprehensive analysis of the CEESEN-BENDER project, its lessons learned, and stakeholder feedback from five Central and Eastern European countries (Croatia, Estonia, Poland, Romania, and Slovenia), the following prioritized and strategic policy recommendations are presented. These recommendations are designed to be actionable, evidence-based, and targeted specifically at policymakers at national and EU levels who shape the frameworks, funding programmes, and regulatory conditions for energy renovation of multi-apartment buildings (MABs) and energy poverty alleviation.

Energy renovation of multi-apartment buildings in Central and Eastern Europe is hindered by a complex interplay of financial, regulatory, technical, and social barriers. The CEESEN-BENDER project has demonstrated that technical solutions are rarely the main challenge. Success depends on predictable financing, reliable data, institutional capacity, trust-building, and targeted support for vulnerable households.

1. Creating predictable, targeted, and accessible funding

1.1 Establish dedicated funding streams for energy-poor households

Current Barrier	Policy Recommendation	Target Audience
No grant schemes specifically targeting energy-poor households in MABs across most CEE countries. Even the best technical assistance and renovation roadmaps do not lead to actual renovation without dedicated funding.	Create dedicated grant schemes for energy-poor households in MABs with zero or minimal co-financing requirements. Use EU funds (Social Climate Fund, ERDF, CF) to establish these streams. Ensure energy-poor households can access renovation funding without needing upfront capital or loan repayment capacity.	EU and national governments
Grant programmes require co-financing that vulnerable households cannot afford.	Design grants with reduced or zero co-financing requirements for households below income thresholds. Link eligibility to energy poverty indicators (income, building energy performance, expenditure on energy).	National governments, managing authorities

Current Barrier	Policy Recommendation	Target Audience
Vulnerable households fear debt and cannot access loans.	Utilise the Social Climate Fund for long-term investments like deep renovation. Include measures to compensate vulnerable households for short-term increases in living costs following renovation (e.g., reduced energy bills offset loan repayments).	EU and national governments

1.2 Ensure predictable and transparent grant cycles

Current Barrier	Policy Recommendation	Target Audience
Grant calls are irregular, unpredictable, and often oversubscribed within days. Renovation activity peaks and stagnates based on grant availability, disrupting workforce planning.	Establish regular, multi-annual grant call schedules with predictable timelines. Publish schedules at least 12–18 months in advance to enable long-term planning by homeowners, building managers, and the renovation industry.	National governments, managing authorities
"First-come, first-served" allocation favours applicants with administrative capacity, not buildings in greatest need.	Replace competition-based allocation with needs-based allocation. Use objective criteria: building energy performance, socio-economic indicators of residents, expected energy savings, and health impact. Prioritise buildings with highest energy poverty concentration.	National governments, managing authorities, municipalities

1.3 Develop flexible financing models and improve loan accessibility

Current Barrier	Policy Recommendation	Target Audience
Banks are reluctant to lend for renovation in regions with low property values. Vulnerable households lack collateral and repayment capacity.	Establish loan guarantee mechanisms to reduce bank risk in low-property-value areas. Work with financial institutions to design "green loans" for deep renovations with longer repayment periods, lower interest rates, and income-adjusted terms.	National governments, financial regulators, banks
Homeowners lack access to affordable financing for deep renovation.	Promote and scale green loan products for deep renovation and renewable energy integration. Ensure loans are accessible to households across all regions, not just urban centres with high property values.	National governments, banks, EU financial institutions

2. Build reliable, accessible, and actionable information systems

2.1 Establish national databases on building energy performance and energy poverty

Current Barrier	Policy Recommendation	Target Audience
Building stock data is outdated, incomplete, and often inaccessible. Energy poverty data is insufficient, fragmented, or non-existent.	Establish comprehensive national databases that integrate building energy performance data (EPC, energy consumption) with socio-economic data (income, housing costs, energy expenditure). Ensure databases cover the entire building stock, not just new or renovated buildings.	National governments, statistical offices, energy agencies
Data protection restrictions limit data sharing and identification of vulnerable households.	Establish clear legal frameworks for data sharing that balance privacy protection with the public interest in identifying and supporting energy-poor households. Use aggregated and anonymised data for public reporting.	National governments, data protection authorities

2.2 Improve mechanisms for identifying energy-poor households

Current Barrier	Policy Recommendation	Target Audience
Energy-poor households are difficult to identify due to stigma, privacy concerns, and lack of cooperation between social and energy sectors.	Develop multi-indicator methodologies to identify energy poverty: income, energy expenditure, self-reported thermal comfort, housing conditions (mould, dampness), and building energy performance. Avoid sole reliance on income status.	National governments, energy agencies, social services
No systematic data collection on energy poverty at municipal level.	Enable municipal-level data collection by providing tools, templates, and funding for local surveys and monitoring. Ensure data collection is respectful, discreet, and avoids stigmatisation.	National governments, municipalities, energy agencies

2.3 Use data for evidence-based targeting and policy planning

Current Barrier	Policy Recommendation	Target Audience
Grant funding is often allocated without systematic prioritization of buildings in greatest need.	Deploy digital tools to rank buildings for renovation based on energy poverty indicators and technical condition. Use these rankings to allocate public funding to the most vulnerable buildings first. Ensure tools are transparent and accessible to municipalities.	National governments, managing authorities, municipalities
Lack of systematic monitoring of renovation outcomes.	Mandate performance-based monitoring for all publicly funded renovation projects. Collect and publish data on energy savings achieved, CO ₂ emission reductions, cost-effectiveness, and impact on residents' health and living conditions.	National governments, managing authorities, project implementers

3. Strengthen local and regional implementation

3.1 Establish One-Stop Shops and advisory services

Current Barrier	Policy Recommendation	Target Audience
Homeowners and building managers lack technical, financial, and administrative expertise to navigate renovation processes.	Establish or expand One-Stop Shop (OSS) services that provide integrated support: technical guidance, financial advice, grant application assistance, and administrative help. Ensure OSS services are accessible in all regions, especially rural and underserved areas.	National governments, municipalities, energy agencies
Vulnerable households require personalised, face-to-face support, not generic information.	Train energy advisors to provide consultations to vulnerable groups, combining technical expertise with social engagement skills. Use the Train-the-Trainer model (aligned with EPAH) to build capacity at scale.	National governments, energy agencies, training providers
Household visits often identify problems that individual households cannot solve alone, such as poor building envelopes, dampness, poor ventilation, overheating, or inefficient shared heating systems.	Create structured pathways from household-level advice to building-level renovation follow-up. OSS services and energy advisors should document recurring household-level problems, translate them into building-level renovation needs, and organise follow-up meetings with building managers, homeowner associations, municipalities and residents. Link these follow-ups to available funding schemes and technical support.	National governments, municipalities, energy agencies, building managers, homeowner associations

3.2 Build capacity of local authorities and building managers

Current Barrier	Policy Recommendation	Target Audience
Local authorities lack staff, expertise, and resources to manage renovation projects and energy poverty programmes.	Provide dedicated funding and training for local authorities, especially smaller municipalities with lower administrative capacity. Allocate specific budgets for local-level implementation of renovation measures.	National governments, municipalities
Building managers are critical intermediaries but often lack training practical communication tools, and guidance for achieving agreement among apartment owners.	Offer specialised training and practical communication toolkits for building managers and homeowner associations. These should include meeting templates, Q&A materials, resident-facing explanations of costs and benefits, guidance for reaching agreement among co-owners, and support for grant application processes. Building managers are key to building trust and achieving consensus.	National governments, housing associations, energy agencies
Shortage of skilled workers, certified contractors, designers, and energy experts.	Invest in vocational education and professional development for the renovation sector. Address shortages of HVAC designers, certified construction companies, and specialised renovation experts.	National governments, education ministries, industry bodies

4. Engage communities and build confidence

4.1 Use trusted intermediaries and avoid stigmatizing language

Current Barrier	Policy Recommendation	Target Audience
Vulnerable households avoid engagement due to stigma associated with "energy poverty" and reluctance to self-identify.	Avoid using the term "energy poverty" in direct communication with beneficiaries. Instead, focus on positive, practical benefits: "healthier homes," "lower bills," "better living conditions," "improved comfort," and "increased property value."	National and local governments, energy agencies, communication departments
Households do not trust institutions or unknown experts.	Deploy "energy ambassadors", community members who share their positive renovation experiences. People are more likely to trust peers than institutions. Engage trusted local actors: building managers, social workers, firefighters, healthcare providers, and chimney sweepers.	National governments, municipalities, community organisations
Residents often do not act on technical recommendations when renovation benefits are presented in abstract, overly technical, or generic terms.	Use clear, locally understandable communication supported by visual and practical evidence. Present renovation benefits through thermographic images, indoor climate and air quality measurements, energy reports, before-and-after examples, and visits to renovated buildings. Frame results around comfort, health, safety, lower bills and better living conditions.	National and local governments, energy agencies, OSS providers, building managers, communication departments

4.2 Ensure inclusive and meaningful stakeholder participation

Current Barrier	Policy Recommendation	Target Audience
Policy design and programme development often lack meaningful stakeholder involvement. Vulnerable groups are excluded.	Mandate genuine, inclusive stakeholder participation in programme design and policy definition. Ensure participation is not merely a "tick-box" exercise. Provide accessible formats, clear information, and support to enable vulnerable groups to participate.	National governments, managing authorities, municipalities
Citizen-led energy initiatives are underdeveloped or unsupported.	Recognise and support existing citizen-led energy initiatives (energy communities, tenant associations, community groups). Translate enabling frameworks for renewable energy communities into concrete measures.	National governments, municipalities

4.3 Maintain engagement beyond project lifetimes

Current Barrier	Policy Recommendation	Target Audience
Engagement often ends when projects finish, undermining long-term trust and sustainability.	Ensure repeated engagement with beneficiaries before, during and after renovation. Provide follow-up consultations, Q&A sessions, feedback on renovation results, and opportunities for residents and building-level stakeholders to ask questions as the process develops. Build long-term relationships through community networks and ongoing advisory services.	National governments, municipalities, energy agencies

5. Renewable energy: integrate RES in MAB renovation

5.1 Provide incentives and remove legislative obstacles for RES integration

Current Barrier	Policy Recommendation	Target Audience
RES integration is often either neglected in renovation programmes or promoted without sufficient assessment of technical, legal and financial feasibility.	Include RES integration in MAB renovation support but require early-stage feasibility screening before prioritising or incentivising projects. Screening should assess roof condition, structural readiness, grid connection, expected self-consumption, electricity sharing options, financial return, and resident priorities. Provide higher subsidies or preferential terms for RES measures where they are technically, legally and economically justified and do not delay essential renovation measures.	National governments, managing authorities, municipalities, energy agencies
Even where rooftop PV is technically feasible, unclear or restrictive rules for electricity sharing within MABs weaken the business case for energy communities.	Remove legislative and practical obstacles for electricity sharing in MABs. Create clear rules for collective self-consumption, internal allocation of generated electricity, billing and settlement, sale of electricity to neighbours where possible, grid connection procedures, and the legal form of energy communities.	National governments, energy regulators, distribution system operators

5.2 Showcase good practices and build capacity

Current Barrier	Policy Recommendation	Target Audience
Lack of awareness and knowledge about RES integration benefits and feasibility.	Showcase good practices that have successfully overcome technical and financial obstacles for RES integration. Use study visits, case studies, and demonstration projects to build political will and stakeholder trust.	National governments, energy agencies, municipalities
Limited capacity among local authorities and communities to implement RES projects.	Provide training and guidance for local authorities, renewable energy communities, and citizen-led initiatives in line with Article 29 of the EPBD. Ensure vulnerable households benefit from available opportunities.	National governments, energy agencies, training providers

6. Making the regulatory framework simpler, more prioritised, and integrated

6.1 Give energy renovation and energy poverty greater policy priority

Current Barrier	Policy Recommendation	Target Audience
Energy renovation and energy poverty are not sufficiently prioritised in national strategic documents.	Give building renovation and energy poverty alleviation greater policy priority in National Energy and Climate Plans (NECPs), National Building Renovation Plans (NBRPs), and Long-Term Renovation Strategies (LTRSs). Ensure targets are backed by sufficient resources and monitoring mechanisms.	National governments
"Just transition" and social inclusion principles are not explicitly integrated into renovation policies.	Integrate "just transition" and social inclusion principles explicitly into key renovation documents. Ensure that energy renovation programmes do not leave vulnerable groups behind and actively reduce social inequalities.	National governments

6.2 Simplify administrative procedures and improve transparency

Current Barrier	Policy Recommendation	Target Audience
Complex administrative procedures and lengthy application processes discourage applicants.	Simplify application procedures for grants and support programmes. Provide clear guidance, templates, and assistance to applicants. Ensure application processes allow sufficient time for preparation.	National governments, managing authorities
Lack of transparency in application processing and funding decisions undermines trust.	Publish clear information on eligibility criteria, application steps, processing timelines, and funding decisions. Publish data on applied and approved projects and total resources available to enable assessment of programme effectiveness.	National governments, managing authorities
Unclear or contested property ownership complicates renovation decision-making in MABs.	Provide legal and administrative support to resolve ownership disputes and clarify property rights. Simplify decision-making thresholds (e.g., Slovenia's 50% consent threshold) to prevent minority owners from blocking renovation projects.	National governments, legal authorities

Summary of priority actions for national and EU decision-makers

Priority Area	Top 3 Actions
Financing	1. Create dedicated grant schemes for energy-poor MAB households with zero co-financing requirements. 2. Establish regular, multi-annual grant call schedules for predictable planning. 3. Develop loan guarantee mechanisms and green loans for deep renovation.

Priority Area	Top 3 Actions
Data	1. Establish national databases integrating building energy performance and socio-economic data. 2. Develop multi-indicator methodologies for identifying energy-poor households. 3. Mandate performance-based monitoring and publish transparent outcomes.
Institutional Capacity	1. Establish One-Stop Shops providing integrated technical, financial, and administrative support, including structured pathways from household visits to building-level renovation follow-up. 2. Provide dedicated training for local authorities, building managers, and energy advisors. 3. Invest in vocational education to address skilled labour shortages.
Trust and Participation	1. Use "energy ambassadors" trusted intermediaries, locally understandable language, and visual evidence instead of stigmatising or overly technical communication. 2. Mandate genuine, inclusive stakeholder participation in policy design. 3. Recognise and support citizen-led energy initiatives.
Renewable Energy	1. Assess RES/PV feasibility early and support integration where it is technically, legally and economically justified. 2. Remove legislative and practical obstacles for electricity sharing and energy communities in MABs. 3. Showcase good practices and build capacity for RES integration.
Regulatory Framework	1. Give renovation and energy poverty greater priority in national strategic documents. 2. Simplify administrative procedures and ensure transparent, needs-based allocation. 3. Integrate "just transition" and social inclusion principles explicitly into policies.



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